

SUPPORT FOR THE AMENDMENTS

Support for the amendment of Claim 1 is found on page 13, line 3, in the specification (silica) and on page 11, lines 5-9 (carried on zeolite).

Claim 8 is amended to depend from Claim 1.

No new matter will be added to this application by entry of this amendment.

Claims 1-4 and 7-16 are active.

REMARKS/ARGUMENTS

The claimed invention provides a method for removing sulfur compounds contained in a hydrocarbon-containing gas. According to the invention as described in Claim 1, a hydrocarbon-containing gas is fed to a desulfurizing bed comprising two desulfurizing agents. Desulfurizing agent A comprises at least one metal component selected from the group consisting of Ag, Cu, Ni, Zn, Mn, Fe, Co, an alkali metal, an alkaline earth metal and a rare earth metal **carried on a zeolite**. Desulfurizing agent B comprises at least one selected from the group consisting of cerium oxide and a metal component-carried on a porous inorganic oxide. The metal component is at least one selected from the group consisting of Ag, Cu, Ni, Fe, Co, Si, an alkali metal, an alkaline earth metal and a rare earth metal, and the porous inorganic oxide is at least one selected from the group consisting of alumina, silica, silica-alumina and cerium oxide. No such method is disclosed or suggested in the cited combination of references.

Applicants wish to thank Examiner Singh for the useful and courteous discussion of the above-identified application with Applicants' representatives on May 19, 2009. At that time the description of the Takashi and Feimer references were reviewed with respect to the claimed invention. Suggested amendment of Claim 1 to distinguish over the cited references was discussed. The following reiterates and expands upon that discussion.

Applicants note that Claim 1 is herein amended to describe that desulfurizing agent A comprises a metal carried on a zeolite. This description is supported in the specification on page 11, lines 5-16.

The rejection of Claims 1-4 and 7-16 under 35 U.S.C. 103(a) over Takashi et al. (JP 2001-278602) in view of Feimer et al. (U.S. 2002/0157990) is respectfully traversed.

Takashi is directed to a method for removing sulfur contaminants from petroleum hydrocarbons, by contacting the petroleum hydrocarbon with a first desulphurization agent which is a **halogen supported on a porous substrate** [0005] and [0007] (17th group element, preferably Bromine) and a second desulphurization agent such as Co-Mo/alumina or Ni-Mo/alumina [0010].

The Office has combined a component from the first Takashi agent (zeolite) with a component of the second Takashi agent (metal component selected from Cu, Ni, Zn, Mn, Fe and Co) in the following paragraph (Official Action dated November 24, 2008, page 3, line 22 to page 4, line 3):

Takashi discloses a desulfurizing agent A comprising silica, alumina, silica-alumina, zeolite, etc. as desulfurizing agent supports which may be used independently or as combinations of two or more (See paragraph 0008). Takashi also discloses using at least one metal component selected from the group consisting of Cu, Ni, Zn, Mn, Fe and Co (See paragraph 0010).

The Office has indicated that the primary reference discloses a zeolite support and pointed to the previous open description of Claim 1 as including such description.

Applicants respectfully note that Claim 1 is herein amended to describe that desulfurizing agent A comprises a metal carried on a zeolite. In contrast, the cited reference describes the desulfurizing agent A which is a support containing a halogen, which is preferably hydrogen bromide (hydride of bromine). Applicants respectfully submit that nowhere does Takashi disclose or suggest a desulfurization system having two agents as presently described in Claim 1 of the above-identified application.

The Office has acknowledged that Takashi does not disclose cerium oxide as a component of the desulfurizing agent B (Official Action dated November 24, 2009, page 4, lines 11-12) and cites Feimer as showing a porous support of cerium oxide.

Feimer describes an adsorbent comprised of cobalt and one or more Group VI metals selected from molybdenum and tungsten on a refractory support (Abstract)(Claims 1 and 9).

The Office has alleged the combination of Takashi and Feimer as follows (Official Action dated November 24, 2008, page 4, lines 20-12):

Thus, it would have been obvious to one skilled in the art at the time of invention to modify Takashi invention and use a combination of cerium oxide and Co-Mo/alumina as desulfurizing agent B as disclosed by Feimer because cerium oxide is functionally similar to alumina.

Applicants respectfully disagree with the obviousness of the combination and point out that Takashi describes Co-Mo/alumina as a hydrodesulfurization catalyst, i.e., a catalyst for hydrogenation (employing hydrogen) of the sulfur containing material [0010] whereas Feimer describes adsorbent materials (in the substantial absence of added hydrogen – Claim 1). The MPEP § 2143.01 VI. states:

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious.

Moreover, Applicants respectfully submit that Takashi requires a first desulfurization agent which contains a **halogen** supported on a porous substrate. In contrast, the claimed invention as recited in Claim1 comprises a **at least one metal component selected from the group consisting of Ag, Cu, Ni, Zn, Mn, Fe, Co, an alkali metal, an alkaline earth metal and a rare earth metal carried on a zeolite.**

Applicants respectfully submit that even if the descriptions of Takashi and Feimer are combined, the combined result would disclose a first agent being a halogen on a porous support and not a zeolite carrying a metal as presently claimed.

Applicants respectfully call the Examiner's attention to the following excerpt from the Office's own discussion of "**Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in View of the Supreme Court Decision in *KSR International Co. v. Teleflex Inc.***"

"The rationale to support a conclusion that the claim would have been obvious is that **all the claimed elements were known in the prior art** and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded nothing more than predictable results to one of ordinary skill in the art at the time of the invention.⁴³ "[I]t can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does."⁴⁴ **If any of these findings cannot be made, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art,**" (Federal Register, Vol. 72, No. 195, page 57529) **(Bold added)**

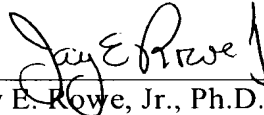
In view of the foregoing, Applicants respectfully submit that the cited combination of references do not describe all the claimed elements and therefore a conclusion of obviousness cannot be supported. Accordingly, as the cited combination of references cannot render the claimed invention obvious, withdrawal of the rejection of Claims 1-4 and 7-16 under 35 U.S.C. 103(a) over Takashi in view of Feimer is respectfully requested.

Application No. 10/540,881
Reply to Office Action of November 24, 2008

Applicants respectfully submit that the above-identified application is now in condition for allowance and early notice of such action is earnestly solicited.

Respectfully submitted,

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